

HOLDER FOR AN ELECTRONIC DEVICE

BACKGROUND OF THE INVENTION

Field of the Invention

[0001] The present invention relates generally to an electronic device holder. In particular, the present invention relates to a device holder that can accommodate electronic devices of different shapes and sizes and can be used to secure a portable electronic device in a personal organizer or to a surface.

Related Art

[0002] People today frequently use portable electronic devices (such as personal digital assistants, notebook computers, tablet PCs, cell phones and calculators) and personal organizers in order to increase efficiency, maximize information and increase intelligence.

[0003] One example of such an electronic device is a personal digital assistant, or PDA. PDAs are generally used to store calendars, phone numbers, addresses, to-do lists and other important information. PDAs usually have a handwriting-input area, handwriting recognition ability and wireless communication. They are characterized by their portability. Another type of electronic device is a cell phone or mobile phone. Cell phones use wireless communication to interface with traditional land-based telephone systems. Some cell phones today even incorporate the functionality of a PDA into one device. The users of PDAs, cell phones and other such portable electronic devices often carry them in their pocket, briefcase or purse and desire to protect them with a case or other means to hold the device.

[0004] In addition to the aforementioned electronic devices, people also maintain information in personal organizers such as notebooks, binders and folios. Such organizers are used, for example, to store credit cards, business cards and passports. In addition, personal organizers often contain a pad of paper for writing notes and a calendar for maintaining important dates. It is also common to carry a PDA, cell phone, or other personal electronic device

in a personal organizer. Some organizers include a hook and loop fastener patch (known by the trademark VELCRO) in the organizer and a complimentary one that can be adhered to the PDA in order to hold it in the organizer.

[0005] Other holders for PDAs also exist in the art. For example, U.S. Pat. No. 6,392,882 discloses a holder for protecting a PDA. This holder automatically shuts off the PDA when it is placed in the holder and comes in contact with the bottom of the holder. One disadvantage of this holder is that the bottom flange covers the computer interface on many PDAs, which necessitates the removal of the PDA before it can be connected with a peripheral or battery charger, for example. In addition, the opposing guard borders or sides of the holder of this patent extend over the side edges of the PDA. This may impair access to the face of the PDA and may also require the holder to be custom manufactured for each model of PDA.

[0006] U.S. Pat. No. 6,264,029 (the '029 patent) discloses a portable organizer including an adjustable clamp used for gripping a PDA. Similarly, U.S. Pat. App. No. 2003/0029754 (the '754 patent application) discloses a carrying bag including an adjustable clamp used for gripping a PDA. Both clamps are adjustable to accommodate different sized PDAs. However, both the '029 patent clamp and the '754 patent application clamp have an upper and lower bracket. These brackets cover the computer interface and wireless port on many PDAs. This necessitates removal of the PDA before these functions can be used. Further, both clamps move relative to each other and are adjustable by an elastic member, which may break or lose its memory through use over time, rendering the clamp useless. These clamps also require multiple manufacturing steps and are relatively expensive to make.

[0007] U.S. Pat. No. 6,520,466 discloses an attachment device for securing a PDA to a notebook or automobile surface. While the attachment is made of one piece of flexible material, it includes a plurality of deflectable securement arms with securement tabs. These tabs clamp to the surface of the PDA and extend over the face of the secured electronic device. This may obscure the display face and inhibit full functionality of the PDA. Further, the holder has

base tabs that prevent the PDA from being removed from both the top and bottom end of the holder for easy access.

[0008] It is therefore an object of this invention to provide an electronic device holder that is relatively simple in design, requires few manufacturing steps, has no moving mechanical parts and is inexpensive to make.

[0009] It is a further object of this invention to provide an electronic device holder that can maintain an electronic device in a position of easy accessibility and can be accessed using only one hand.

[0010] It is a further object of this invention to provide an electronic device holder such that the device does not need to be removed in order to use all of its features and the device can extend above and below the electronic device holder, such as to enable the movement of a top flap or cover.

[0011] It is a further object of this invention to secure an electronic device without permanently attaching adhesive, hook and loop fastener or mechanical fastener to a surface of the electronic device.

[0012] It is a further object of this invention to provide a single electronic device holder that can accommodate a family of electronic devices of different shapes and sizes, such as personal digital assistants, notebook computers, tablet PCs, cell phones, calculators and the like.

[0013] It is a further object of this invention to provide a personal organizer, such as a notebook, binder, folio, or the like, that includes the electronic device holder of the present invention for securing an electronic device thereto.

[0014] It is a further object of this invention to provide an electronic device holder that can be mounted to a surface, such as a clip board, dashboard, wall, desk or the like, for securing an electronic device thereto.

SUMMARY OF THE INVENTION

[0015] The present invention provides a holder that can secure an electronic device in a position of accessibility. As referred herein, the term electronic device relates to personal digital assistants (PDAs), cell phones, radios, global

positioning satellite receivers, MP3 players, CD players, mini-disc players, notebook computers, hand-held computers, tablet PCs, calculators, bar code scanners and other handheld and/or portable electronic devices. The term electronic device includes electronic devices used for personal, individual and/or commercial use. The holder can accommodate electronic devices of different shapes and sizes without attaching any sort of fastener to a surface of the electronic device.

[0016] An electronic device is secured in the holder in a position of accessibility by the deflection of the holder arms. The user can operate the device without removing it from the holder. The arms are likewise deflectable for the removal of the electronic device, so that the batteries can be recharged or replaced, for example.

[0017] In one embodiment of the invention, the device holder is secured in a personal organizer. The personal organizer may also include a note pad, calendar, writing instrument loop, binder or ring element and holders for other items.

[0018] In another embodiment of the invention, the device holder includes a fastener for attaching the device holder to a surface such as an automobile dashboard. This fastener may be a hook and loop fastener, a mechanical fastener or some other means of fastening the device holder to a surface.

BRIEF DESCRIPTION OF THE DRAWINGS/FIGURES

[0019] The foregoing and other features and advantages of the invention will be apparent from the following, more particular description of preferred embodiments of the invention, as illustrated in the accompanying drawings.

[0020] FIG. 1 is a front elevational view of one embodiment of the present invention.

[0021] FIG. 2 is a top plan view of the embodiment of FIG. 1.

[0022] FIG. 3 is a front perspective view of the embodiment of FIG. 1.

[0023] FIG. 4 is a front perspective view of the embodiment of FIG. 1 being used to secure an electronic device.

[0024] FIG. 5 is a front perspective view of the embodiment of FIG. 1 interconnected to an interior surface of a personal organizer.

[0025] FIG. 6 is a front elevational view of a second embodiment of the present invention.

[0026] FIG. 7 is a top plan view of the embodiment of FIG. 6.

[0027] FIG. 8 is a bottom plan view of the embodiment of FIG. 6.

[0028] FIG. 9 is a top plan view of the embodiment of FIG. 6 being used to secure an electronic device.

[0029] FIG. 10 is a top plan view of the embodiment of FIG. 6 interconnected to an interior surface of a personal organizer.

DETAILED DESCRIPTION OF THE INVENTION

[0030] A preferred embodiment of the present invention is now described with reference to the figures, where like reference numbers indicate identical or functionally similar elements. While a specific configuration is discussed, it should be understood that this is done for illustrative purposes only. A person skilled in the relevant art will recognize that other configurations and arrangements can be used without departing from the spirit and scope of the invention.

[0031] Referring to FIGS. 1-3, a device holder 2 is generally shown. Device holder 2 has a base 4, a first arm 26 and a second arm 44 is shown. Base 4 has a top surface 6, a bottom surface 8, a first side 10, a second side 12, a third side 14 and a fourth side 16. First arm 26 is connected to base 4 at first connection point 18, which is located contiguous to first side 10. Second arm 44 is connected to base 4 at second connection point 20, which is located contiguous to second side 12. Third side 14 and fourth side 16 are both relatively obstruction free, meaning that they have no protrusions or arms extending above the surface of base 4. This allows electronic device 62 to extend above and below third side 14 and fourth side 16.

[0032] Proximal end 30 of first arm 26 is connected to base 4 at first connection point 18. First arm 26 is formed in an S-like shape including an

outward curve 38, inward curve 36 and flange 40. Outward curve 38 of first arm 26 is located proximate to proximal end 30. Outward curve 38 curves away from second arm 44. Inward curve 36 of first arm 26 is located proximate to outward curve 38 and curves towards second arm 44. Contact edge 42 of first arm 26 is located on inward curve 36 at its point of closest approach to second arm 44. Flange 40 extends outwards and curves away from contact edge 42 in such a way that the distal end 32 of first arm 26 is in close proximity to outward curve 38.

[0033] Proximal end 48 of second arm 44 is connected to base 4 at second connection point 20. Second arm 44 is also formed in an S-like shape and comprises an outward curve 56, inward curve 54 and flange 58. Outward curve 56 of second arm 44 is located proximate to proximal end 48. Outward curve 56 curves away from first arm 26. Inward curve 54 of second arm 44 is located proximate to outward curve 56 and curves towards first arm 26. Contact edge 60 of second arm 44 is located on inward curve 54 at its point of closest approach to first arm 26. Flange 58 extends outwards and curves away from contact edge 60 in such a way that the distal end 50 of second arm 44 is in close proximity to outward curve 56.

[0034] Device holder 2 is constructed of a material that provides rigidity in base 4 and also provides for elasticity between first arm 26 and second arm 44. Spring steel would be one example of such a material. In a preferred embodiment, device holder 2 is made from 0.014 x 1" AISI #1050 annealed high carbon steel. AISI #1050 annealed high carbon steel is a mixture of (by weight): 0.48-0.55% carbon, 0.60-0.90% manganese, 0.040% phosphorus, 0.050% sulfur (maximum) with the balance being iron. The material used in device holder 2 may be made by stamping from a single unit of material. Device holder 2 may include a friction increasing surface, covering or coating 24. In a preferred embodiment, device holder 2 is coated entirely with a friction increasing black matte finish applied by a powder coating. First arm 26 and second arm 44 are biased towards each by virtue of the elasticity of the material and their outward curves 38 and 56, respectively. First arm 26 can be loaded by a force applied to contact edge 42, maintain that loaded position for

a given period of time, and then return to an unloaded position upon removal of the loading force. Second arm 44 can be loaded by a force applied to contact edge 60, maintain that loaded position for a given period of time, and then return to an unloaded position upon removal of the loading force. In normal operation of the present invention, this loading and unloading occurs when an electronic device 62 is secured in device holder 2. Integrally formed ribs 22 provide longitudinal support for base 4. This helps ensure that base 4 does not flex longitudinally or laterally. In addition, base 4 has no curvature that would provide for a biasing between any two points on base 4. Consequently, first connection point 18 and second connection point 20 do not move relative to each other.

[0035] FIG. 4 shows device holder 2 securing an electronic device 62. Electronic device 62 may be a PDA, cell phone, MP3 player or other device. First arm 26 and second arm 44 are biased towards each other and deflect to receive and hold electronic device 62 with a friction fit. First arm 26 contacts left side 64 of electronic device 62 at contact edge 42. Likewise, second arm 44 contacts right side 66 of electronic device 62 at contact edge 60. Electronic device 62 is secured in place both by the biasing force created by the deflection of first arm 26 and second arm 44 and by friction forces created by contact between contacting edges 42 and 60 with left side 64 and right side 66, respectively. Third side 14 and fourth side 16 of base 4 are relatively obstruction free so that access to wireless port 70 on upper side 68 and access to computer interface 74 on lower side 72 are not obstructed in any way by device holder 2, and can be accessed even when electronic device 62 is inserted in holder 2. Base 4 can include fastener 86 for removably securing device holder 2 to a surface 7.

[0036] In use, a user inserts electronic device 62 into holder 2 by pushing it against the left side 64 of electronic device 62 against contact edge 42. This force loads first arm 26 and increases the distance between contact edge 42 and contact edge 60 so that it exceeds the overall distance between left side 64 and right side 66. The user then positions electronic device 62 so that right side 66 abuts contact edge 60. The user then releases the force so that first

arm 26 and second arm 44 grip electronic device 62. Alternatively, the user may load second arm 44 and slide the electronic device past first arm 26.

[0037] To remove electronic device 62, a user pushes it towards either first arm 26 or second arm 44. This increases the distance between contact edge 42 and contact edge 60 so that it exceeds the overall distance between left side 64 and right side 66. The user can then remove electronic device 62 and the device holder 2 returns to its original, unstressed state.

[0038] FIG. 5 shows device holder 2 incorporated into a personal organizer 76 such as a notebook. By notebook, it is meant any type of folio or other carrier for paper, cards, passports, documents, personal electronic devices or other personal items. Device holder 2 is connected to an internal surface 78 of device holder 2. This connection may be achieved by securing device holder 2 to internal surface 78 of organizer 78 with a fastener 86. Alternatively, layer 80 of internal surface 78 may have slits formed in it thorough which device holder 2 can be accessed. Device holder 2 can be inserted into a first opening 82 and a second opening 84 of layer 80 so that first arm 26 and second arm 44 extend outwardly, away from internal surface 78. Base 4 is secured to internal surface 78 by any suitable means such as an adhesive, and covered by internal layer 78. First arm 26 and second arm 44 are visible and base 4 is not visible in this embodiment. Personal organizer 76 may optionally include a notebook 88 and binder rings 90.

[0039] FIGS. 6-10 show an alternate embodiment of the device holder of the present invention. Device holder 102 has a base 104, a first arm 126 and a second arm 144. Base 104 has a top surface 106, a bottom surface 108, a first side 110, a second side 112, a third side 114 and a fourth side 116. First arm 126 is connected to base 104 at first connection point 118, which is located contiguous to first side 110. Second arm 144 is connected to base 104 at second connection point 120, which is located contiguous to second side 112. Third side 114 and fourth side 116 are both relatively obstruction free, meaning that they have no protrusions or arms extending above the surface of base 104. This allows electronic device 162 to extend above and below third side 114 and fourth side 116, as shown in FIG. 9. First arm 126 is formed in an

S-like shape including an outward curve 138, inward curve 136 and flange 140. Second arm 144 is also formed in an S-like shape and comprises an outward curve 156, inward curve 154 and flange 158. As compared to the embodiment in FIG. 1, flanges 140 and 158 of the embodiment in FIG. 6 only slightly extend outward and curve away from contact edges 142 and 160, respectively. Distal end 132 of first arm 126 is in close proximity to inward curve 136 and distal end 150 of second arm 144 is in close proximity to inward curve 154. As would be apparent to one of ordinary skill in the art, numerous variations of the first and second arms can be utilized by varying the size and shape of the inward and outward curves and flanges, without departing from the scope of the present invention. Also, various widths of the first and second arms can be employed without departing from the scope of the present invention. For example, first arm 126 and second arm 144, of the embodiment shown in FIGS. 7-10, are narrower than first arm 26 and second arm 44, of the embodiment shown in FIGS. 1-5. Depending on the size and shape of the device to be held and the functionality thereof, including the size and location of features along the side walls of the device, narrow or wider arms may be desired.

[0040] Device holder 102 is constructed of a material that provides rigidity in base 104 and also provides for elasticity between first arm 126 and second arm 144. Spring steel is one example of such a material. First arm 126 and second arm 144 are biased towards each by virtue of the elasticity of the material and their outward curves 138 and 156, respectively. As with the embodiment of FIG. 1, device holder 102 of FIG. 10 can secure various size and shape electronic devices. FIG. 9 shows device holder 102 securing an electronic device 162. FIG. 10 shows device holder 102 incorporated into a personal organizer 176 such as a notebook.

[0041] While various embodiments of the present invention have been described above, it should be understood that they have been presented by way of example only, and not limitation. Thus, the breadth and scope of the present invention should not be limited by any of the above-described exemplary embodiments, but should be defined only in accordance with the

following claims and their equivalents. Additionally, all references cited herein, including journal articles or abstracts, published or corresponding U.S. or foreign patent applications, issued U.S. or foreign patents, or any other references, are each entirely incorporated by reference herein, including all data, tables, figures, and text presented in the cited references.

[0042] The foregoing description of the specific embodiments will so fully reveal the general nature of the invention that others can, by applying knowledge within the skill of the art (including the contents of the references cited herein), readily modify and/or adapt for various applications such specific embodiments, without undue experimentation, without departing from the general concept of the present invention. Therefore, such adaptations and modifications are intended to be within the meaning and range of equivalents of the disclosed embodiments, based on the teaching and guidance presented herein. It is to be understood that the phraseology or terminology herein is for the purpose of description and not of limitation, such that the terminology or phraseology of the present specification is to be interpreted by the skilled artisan in light of the teachings and guidance presented herein, in combination with the knowledge of one of ordinary skill in the art.